



# Town of Goshen

## Water Emergency, Response and Long Term Solution

Coordinators Briefing  
November 2007



# Identified Problems

- Water system failure
- Lack of coordinated response until assistance was requested by the town
- Failure of Town to address water issues in the past



# Identified Problems

- Lack of sufficient staff to address the water outage
- Limited communications, no cell phone coverage, and limited internet capabilities
- Extreme heat conditions - affecting the elderly and very young



# Town of Goshen Waterworks



- The Town of Goshen is Located in Rockbridge County
- Waterworks serves 275 residential customers (450 persons) and several businesses



# Town of Goshen Waterworks



Waterworks infrastructure includes:

- Spring and collection structure, gravity flow to a treatment building and pump station
- Water is distributed through the system by gravity and the pump station.



# Town of Goshen Waterworks



Waterworks infrastructure includes:

- Disinfection by sodium hypochlorite feed





# Town of Goshen Waterworks



Waterworks infrastructure includes:

- Duplex high service pumps:







# Town of Goshen Waterworks



Waterworks infrastructure includes:

- Two gravity storage tanks: 127,000 gallon main tank and a 33,000 gallon tank







# Town of Goshen Water Emergency



- Late on Wednesday, June 13 or early on Thursday, June 14, 2007 the Town of Goshen began to lose water in the distribution system
- Town officials suspected a leak
- On the afternoon of Thursday, June 14, 2007 a major leak was discovered and repaired



# Town of Goshen Water Emergency



- On Friday, June 15 significant water was still being lost and by mid day all storage had been depleted



# Town of Goshen Emergency Response



- A local emergency was declared on the morning of June 14 triggering Rockbridge County Emergency Management activities
- VDH (Office of Drinking Water and the District Medical Director) issued a boil water advisory due to pressure loss throughout the Town of Goshen.



# Town of Goshen Emergency Response



- Assistance was requested from Regional Coordinator Crigger on Tuesday, June 19
- Governor Kaine declared a State of Emergency for the Town of Goshen on Wednesday, June 20



# Town of Goshen Water Emergency



- Staff from the Virginia Rural Water Association arrived in the Town on Friday, June 15 with leak detection equipment







# Town of Goshen Water Emergency



- Bottled water was purchased with assistance of the state and transported to Goshen to provide drinking water for residents





# TOWN OF GOSHEN ASSETS MOBILIZED



- Rockbridge Co. EM
- Private Contractors
- Town Employees
- VDEM
- Depart. Of Corrections
- National Guard
- ARC of the BlueRidge
- Town of Craigsville
- County of Augusta
- RC – PSA
- Volunteer Agencies
- Business & Citizens







# All Total 14 Major Leaks Were Identified and Repaired





# Approximately 120,000 Gallons of Water Hauled to Restore Tank Levels







# Town of Goshen Water Emergency



- Water service was restored late on Friday, June 22 / early Saturday, June 23
- As of today the distribution system is holding and we are able to fill the main storage tank with the Town's pump station





# Town of Goshen Water Emergency



- The major problem is approximately 12,500 ft of 6 Inch cast iron pipe installed in 1930's
- All indications are that the remainder of the distribution system is in better condition
- We also know that many service lines are in poor condition and are leaking
- The Town of Goshen's source water (spring) provides adequate quantity



# Removed Cast Iron Pipe







# Removed Cast Iron Pipe



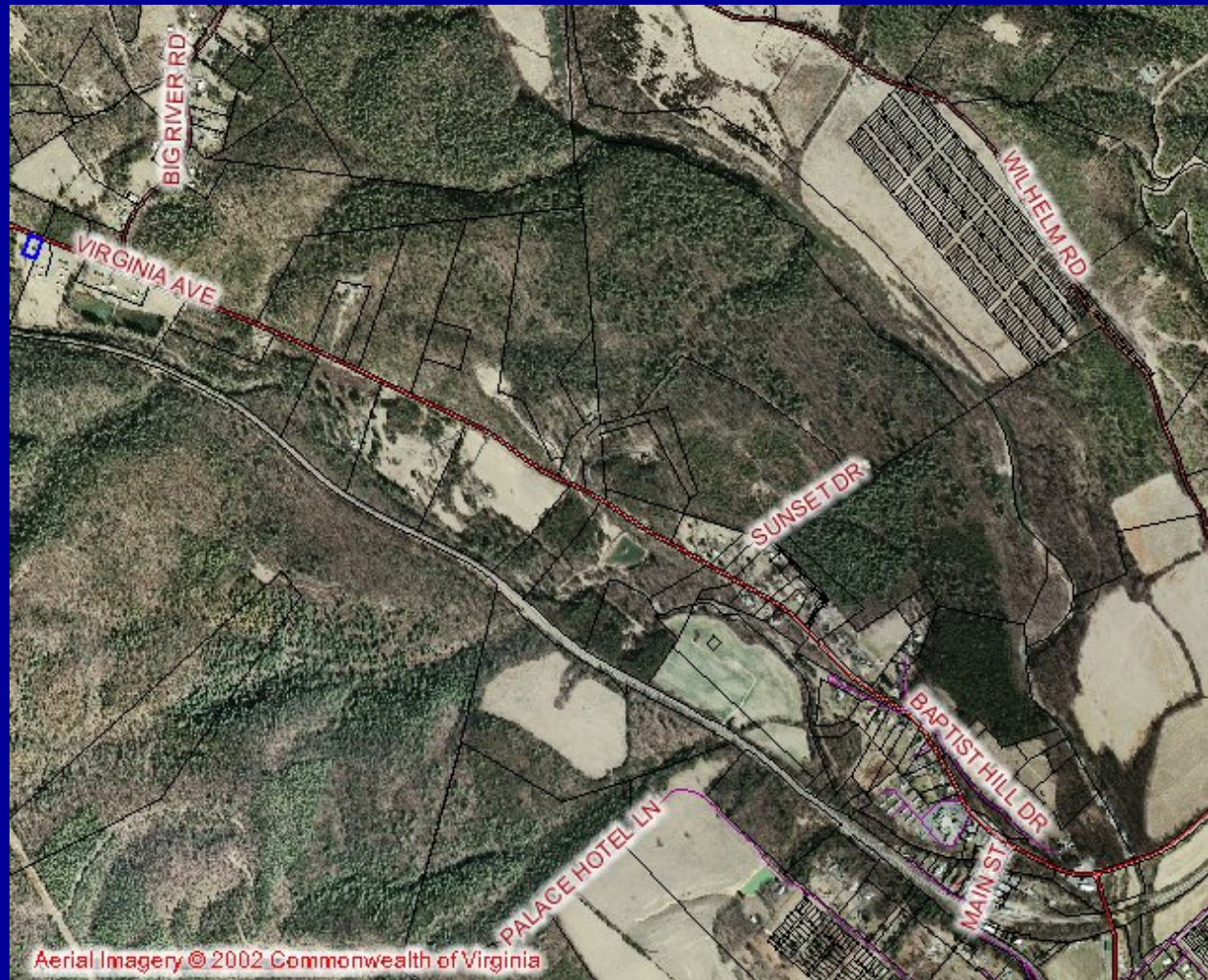




# Town of Goshen Water Emergency



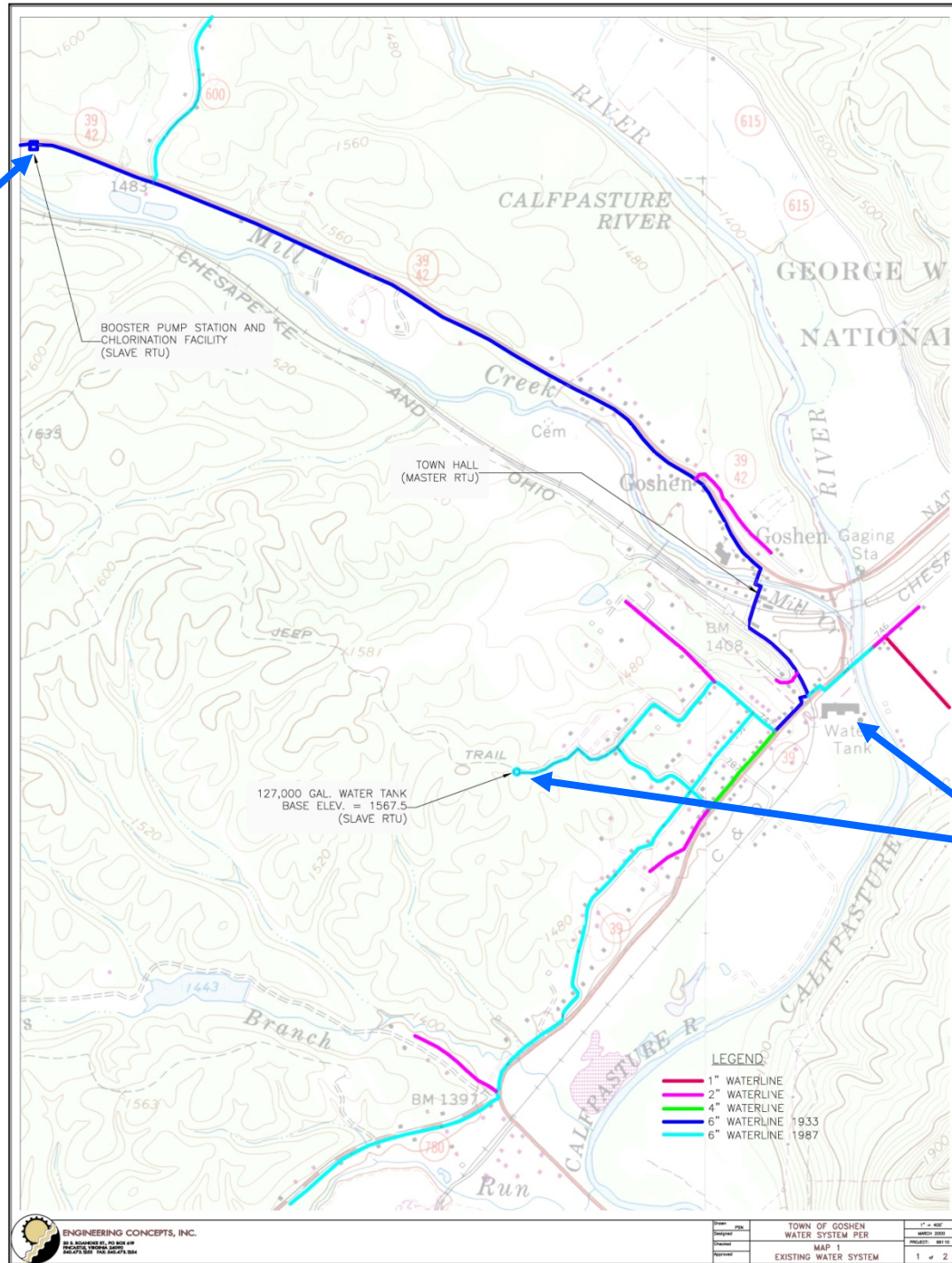
- The 12,500 ft of cast iron waterline is located between the pump station and the majority of users







Pump Station



Water Tanks





# Town of Goshen Water Emergency



- While water service has been restored for the Goshen residents - the water distribution system remains **extremely fragile**
- Another massive failure could occur at any moment
- To ensure that the town has a reliable waterworks - all of the 1930's cast iron pipe must be replaced



# Long Term Solution / Infrastructure Improvements



- Preliminary Engineering Report prepared for the Town of Goshen in 2000 contained recommended improvements to the water system infrastructure
- Route 39 pipe replacement was a recommendation in the PER

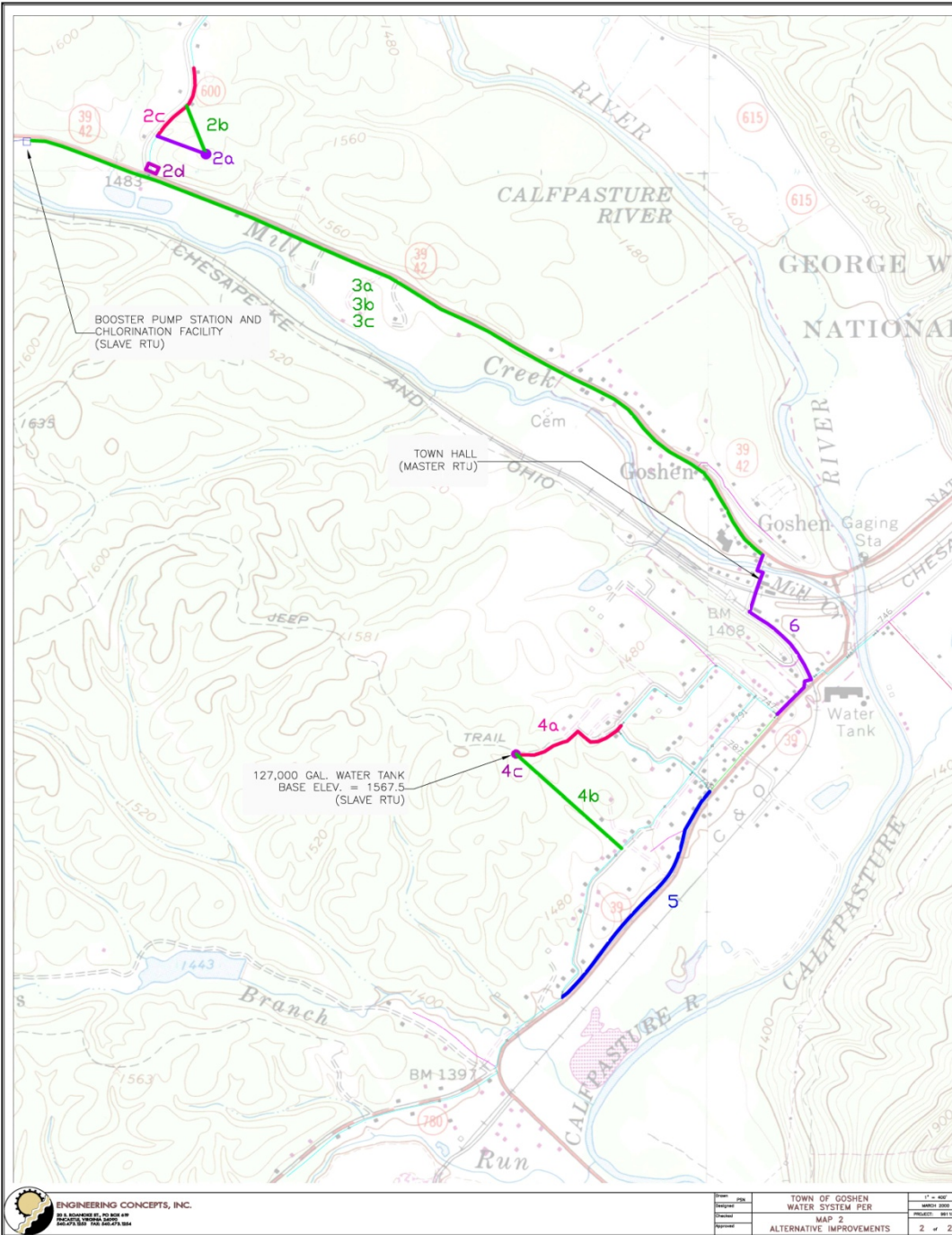
## 2000 PER

### Engineer's recommendations:

- **Option 1 – install meters**
- **Option 2a – new 30,000 gal tank**
- **Option 3a – replace waterline along Rte. 39**
- **Option 2c – upgrade pipe along Rt. 600**
- **Option 4a – upgrade pipe to improve fire flow**

## Projects completed:

- **Option 2a – new 30,000 gal tank**
- **Various leak repairs along Rt. 39**



# Construction Cost Estimate

ITEM	Unit Cost	Units		Total Cost
6 inch Class 50 ductile iron water main	\$ 55.00	12,500	feet	\$ 687,500.00
Crossing Mill Creek (encased)	\$ 30,000.00	1	lump	\$ 30,000.00
6 inch gate valve	\$ 1,500.00	13	ea	\$ 19,500.00
Air Release Valve	\$ 2,000.00	1	ea	\$ 2,000.00
Master Meter and vault	\$ 7,500.00	2	ea	\$15,000.00
Blowoff	\$ 2,000.00	3	ea	\$ 6,000.00
2 inch bore and casing under Rte 39 with valves	\$ 10,000.00	4	ea	\$ 40,000.00
Service Connections 15 feet w/ corp stop and meter	\$ 2,000.00	72	ea	\$ 144,000.00
Railroad crossing - no rock	\$ 250.00	120	feet	\$ 30,000.00
SUBTOTAL:				\$ 974,000
<b>CONTINGENCIES</b>				
Railroad crossing - additional if rock	\$ 350.00	120	feet	\$ 42,000.00
Trench rock excavation - depends on existing trench depth	\$ 150.00	500	cubic yard	\$ 75,000.00
Trench- unsuitable backfill and must use stone	\$ 12.00	12,500	feet	\$ 150,000.00
Contingency Traffic Control (2 men)	\$ 50,000.00	1	lump	\$ 50,000.00
NOTES: 1. Project Scope and estimate developed by VDH-ODW and A.J. Conner General Contracting, Inc. 2. Estimate does not include costs for engineering, inspection, and construction administration services.				SUBTOTAL: \$ 317,000  TOTAL: \$1,291,000



# Additional Infrastructure Needs



- Water meters and shutoffs at all service connections (note that the previous cost estimate included 72 service connections that exist along the Route 39 pipeline – this does not include the remaining customers)
- Upgraded Telemetry and SCADA





# Coordination Issues

- Mill Creek crossing - Army Corp of Engineers, DEQ permits
- VDOT – traffic control and right of way issues
- Railroad crossing – CSX issues
- Problem of maintaining water service during replacement of the Route 39 waterline



# Estimated Costs

- The 2000 PER contained an estimated construction cost for replacing the Route 39 waterline of approximately \$850,000.00
- Additional costs related to engineering, project management, easements, permits, etc. totaled \$ 330,000.00
- Total 2000 PER project cost estimate = \$1.18 Million



# Estimated Costs

- In current dollars the estimated total project cost will be approximately:

\$1.5 to 1.75 Million dollars



# Town of Goshen



## Questions and Discussion

Additional Information:  
[www.goshenva.com](http://www.goshenva.com)

